Revised Draft

Smoky Canyon Mine
Remedial Investigation/Feasibility Study

CERCLA Cover Material Source Evaluation Technical Memorandum

June 2016

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BLM	Bureau of Land Management (U.S. Department of the Interior)
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COPC	Chemical of Potential Concern
CO	Consent Order
cy	cubic yard
EIS	Environmental Impact Statement
FS	Feasibility Study
IDAPA	Idaho Administrative Procedures Act
IDEQ	Idaho Department of Environmental Quality
mg/kg	milligram per kilogram
mg/L	milligram per liter
mmho/cm	millimho per centimeter
NRCS	Natural Resources Conservation Service (U.S. Department of Agriculture)
NTCRA	Non-Time-Critical Removal Action
ODA	overburden disposal area
RI	Remedial Investigation
ROD	Record of Decision
ROM	run-of-mine
SFSC	South Fork Sage Creek
USEPA	U.S. Environmental Protection Agency
USFS	U.S. Forest Service (U.S. Department of Agriculture)

1.0 INTRODUCTION

The J.R. Simplot Company (Simplot) operates the Smoky Canyon Phosphate Mine ("Site" or "Mine") on National Forest System land in southeastern Idaho (Figure 1-1). The Smoky Canyon Mine is the subject of a 2009 Administrative Settlement Agreement and Order on Consent/Consent Order (Settlement Agreement/CO) entered into by the U.S. Forest Service (USFS), U.S. Environmental Protection Agency (USEPA), Idaho Department of Environmental Quality (IDEQ), and Simplot (USFS, USEPA, and IDEQ 2009). The Settlement Agreement/CO provides a mechanism to conduct a Remedial Investigation (RI) and Feasibility Study (FS). In accordance with that Settlement Agreement/CO, Simplot has investigated the environmental effects of phosphate mining and milling operations at the Mine and is in the process of identifying remedies to address environmental conditions that represent a risk to human health or the environment.

Simplot submitted the final RI report (Formation 2014) in which the environmental conditions at the Site are described. The RI shows that selenium concentrations at Hoopes Spring, South Fork Sage Creek (SFSC) springs, lower SFSC, and lower Sage Creek are above the Idaho surface water quality criterion for protection of aquatic life (0.005 milligrams per liter [mg/L] = chronic criterion; Idaho Administrative Procedures Act [IDAPA] 58.01.02.210), and exceed Idaho's current acute criterion (0.02 mg/L). The discharge at these two springs is the primary source of selenium to surface waters in the lower Sage Creek drainage.

The Site sources of selenium and other chemicals of potential concern (COPCs) to the springs are run-of-mine (ROM) overburden materials, removed during active mining to access underlying phosphate ore and then used to backfill pits or placed in external overburden disposal areas (ODAs). The overburden contains different bedrock units (Meade Peak Shale, Rex Chert/limestone, and Cherty Shale) that are chemically and mineralogically distinct from one another. The primary sources of COPCs within the overburden are the sulfides and organic matter present in the Mudstone and Middle Waste Shale from the Meade Peak Member. Water infiltrating through the overburden mobilizes selenium and other COPCs. A portion of the impacted water migrates to the Wells Formation aquifer. In the south portion of the Site, all Wells Formation groundwater that is affected by Site sources discharges at Hoopes Spring and SFSC springs (Formation 2014). The RI analysis indicates that elevated selenium concentrations will persist at the springs over the next several decades unless remedial actions are implemented. The primary remedial actions expected to be evaluated in the FS are source controls (additional low permeability covers on the ODAs to reduce infiltration) and water treatment at the springs.

1.1 Purpose and Objectives

The objective of this Technical Memorandum is to identify source areas and available volumes of the primary materials used in cover systems at the site that will be considered in the FS process under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); these covers are referenced herein as "CERCLA cover systems". The materials are Dinwoody Formation material (referred to as "Dinwoody") and a combination of Rex Chert and limestone gravel (referred to as "Rex Chert/limestone").

The information presented herein will be used to understand the opportunities, constraints, and costs, for developing borrow areas for Dinwoody, and how the material sources will be used for planned mining operations and for the FS CERCLA cover evaluation. Information has been included for Dinwoody and Rex Chert/limestone sources that have already been designated for other projects at the Mine (for example, the East Smoky project and reclamation of Panels F and G). The information provided will be used to develop a matrix of available cover borrow areas to support the identification and evaluation of remedial alternatives in the FS.

1.2 Document Organization

This document is comprised of five sections, organized as follows:

- **Section 1.0 – Introduction**: provides a general description of the purpose of the evaluation.
- **Section 2.0 – Existing Information**: provides a discussion of available information on material types, sources, and uses for recent and ongoing cover system work at the Site, and preliminary estimates of available materials and volumes that may be needed for CERCLA cover systems.
- **Section 3.0 – Cost Evaluation**: presents cost estimates for developing and utilizing potential material sources for CERCLA cover systems.
- **Section 4.0 – Conclusions:** provides a brief summary of the primary findings of the cover material source evaluation.
- **Section 5.0 – References**: provides a listing of the referenced documentation.

2.0 EXISTING INFORMATION

This section presents information on the material types to be evaluated for potential use in CERCLA cover systems. These materials are locally available on National Forest System land as shown in Figure 2-1. Dinwoody Formation and Rex Chert/limestone materials have been tested or previously used for covers developed as part of mining and reclamation operations.

General information prepared for the preliminary listing of potential cover material sources is presented in Table 2-1. For each potential material source, the land ownership and source location relative to the USFS lease area are listed. Other information includes the estimated area, estimated recoverable volume, potential slope issues, assumed haul destination and distance, and recommendation for further evaluation as a CERCLA cover material source. Material sources recommended for further evaluation are included in the discussion of this section; those sources that are not carried forward were eliminated due to issues related to slope steepness, slope stability, accessibility, or previous commitment for other Mine-related uses. Estimated costs to access, excavate, and haul materials from the material source areas to areas potentially requiring CERCLA cover systems are presented and discussed in Section 3.

2.1 Dinwoody Formation Material

Dinwoody is well suited for use in cover systems at the Mine. It is a locally available/abundant material that can be easily accessed in areas near the backfilled pits and external ODAs. The chemical, agronomic, and geotechnical properties of Dinwoody have been characterized in a number of settings at the Mine for its use in cover systems. Available information for Dinwoody material is summarized in Table 2-2 and draws from various sources including the Final RI Report (Formation 2014) and Simplot communications (Simplot 2007 and 2015b). Additionally, the water balance characteristics of Dinwoody are currently being investigated in detail as part of a field performance monitoring system constructed on the southern extent of the Panel E external ODA; the goal of that investigation is to better understand the net percolation in order to evaluate the performance of the Dinwoody cover system design approved for the Panels F and G expansion of the Mine.

Dinwoody has already been successfully used for the cover systems at Panel E and as part of the Non-Time-Critical Removal Action (NTCRA) cover system constructed at the Pole Canyon ODA in 2015 (USFS, IDEQ, and Shoshone-Bannock Tribes 2013). Also, Dinwoody will be used as an important part of the reclamation cover systems at Panel F and Panel G, which will be implemented per reclamation required after completion of active mining by Records of Decision (RODs) for mining issued by the Bureau of Land Management (BLM) and the USFS.

Although there is some variability in the composition and properties of Dinwoody in the area, it is generally comprised of interbedded siltstone, shale, and limestone that grade into a calcareous shale and siltstone with depth. Typically, Dinwoody is a well-graded, fine-textured material with a low saturated hydraulic conductivity, depending on method of placement, and a high moisture storage capacity.

Dinwoody material has been characterized for COPC concentrations and other properties in several investigations and as part of the NTCRA constructed at the Pole Canyon ODA in 2015 (Table 2-2). The Dinwoody borrow source used in 2015 for construction of the NTCRA is located adjacent to and west of Panel D. Selenium concentrations for Dinwoody borrow material samples ranged from 0.12 to 0.4 milligrams per kilogram (mg/kg), which is similar to the range for soils sampled during the RI in Panel E Area 2 (0.073 to 0.94 mg/kg, with a mean of 0.325 mg/kg) (Table 2-2), which was reclaimed with surface layer materials of topsoil and Dinwoody (Formation 2014).

In general, Dinwoody has adequate agronomic properties for growing vegetation when amended with fertilizer. As part of the NTCRA constructed at the Pole Canyon ODA, agronomic results for the Dinwoody borrow area were reviewed relative to guidance for evaluating soils for reclamation as provided by the Natural Resources Conservation Service (NRCS) (2013a, 2013b) via the USFS (2013, 2014). Agronomic testing for comparison with the criteria included in the NRCS suitability guidance focused on assessing results relative to the “not limiting” ranges for pH (6.0 to 8.0), organic matter (1 percent or greater), and salts (electrical conductivity less than 8 millimhos per centimeter [mmho/cm]). Based on the suitability guidance, the Dinwoody borrow area material was generally suitable (“not limiting”) for reclamation per the measured ranges of pH (6 to 8.2), organic matter (1.05 to 1.62 percent), and electrical conductivity (0.4 to 0.5 mmho/cm).

The full listing of preliminarily identified Dinwoody sources is provided in Table 2-1 and shown in Figure 2-1. Of those listed in Table 2-1, the following have been identified for further evaluation:

- B-Panel DW Borrow A and B (located northeast of B-Panel)
- West Smoky DW Borrow C (located west of A-Panel)
- D-Panel DW Borrow A and B (located west of D-Panel)
- E-Panel DW Borrow A and B (located west of E-Panel)

Based on available information obtained from previous investigations of Dinwoody sources (e.g., west of Panel D for the Pole Canyon NTCRA cover system [2015]), the maximum estimated recoverable Dinwoody volume from these potential borrow sources is 7.4 million cubic yards (cy) (Table 2-1). Further testing of Dinwoody will not be required initially due to the amount of sampling and testing that has already occurred (Table 2-2), and given the fact that this material has already been used successfully on-site. However, for further site-specific characterization, Simplot plans to collect samples from test pits to be excavated in the proposed

Dinwoody material source areas. Prior to that field investigation, Simplot will submit an investigation plan for agency review. To the extent possible, potential borrow area materials considered by the FS will be reviewed relative to guidance for evaluating soils for reclamation as provided by the NRCS (2013a, 2013b) via the USFS (2013, 2014).

Current material balances show that all accessible Dinwoody in the on-lease area is required to complete reclamation plans for ongoing/current mining activities, whereas off-lease Dinwoody borrow areas might be available for use in CERCLA cover systems. The volume of cover material that could be needed for a CERCLA remedy has not been specified, pending evaluations conducted under the FS; improved understanding of the required volumes is expected upon finalization of Technical Memorandum 1 (Development and Screening of Remedial Alternatives) in summer 2016. If covers are required for the CERCLA remedy in Panels A and D, with a total surface area of approximately 750 acres (maximum), material volumes would range from 1.2 to 6 million cy corresponding to cover thicknesses of 1 to 5 feet, respectively. If a 3-foot-thick Dinwoody layer is identified for a CERCLA cover system in Panels A and D, then a maximum material volume of 3.6 million cy would be needed.

2.2 Rex Chert/Limestone

The Rex Chert member overlays the ore body at the Mine, and consists of a combination of chert and limestone. The material obtained from the Rex Chert member during the mining process is coarse and gravely. Rex chert/limestone has already been used in ODA covers at the Site, but not as a growth medium as would be the function of Dinwoody. The primary function of the Rex Chert/limestone layer is to provide a capillary break below the cover, deterring root growth into the ROM overburden materials. A capillary break layer can also provide lateral drainage which can improve the long-term stability and performance of covers. Rex Chert/limestone is proven in its effectiveness, and will be incorporated into the CERCLA cover systems evaluated under the FS.

As part of ongoing mining operations in Panel B, Rex Chert/limestone is excavated to access the ore body. Current mining plans call for placement of the excavated Rex Chert/limestone in the pit after the ore has been extracted. However, in preparation for implementation of CERCLA cover systems as part of the remedy, Simplot now proposes to stockpile this Rex Chert/limestone in an area south of the mined pit during Panel B mining over the next several years. By not backfilling the pit with all of the excavated Rex Chert/limestone, the total volume of backfill material available for Panel B would be reduced. Therefore, a change in the final topography of Panel B will be proposed by Simplot for approval by the agencies. Site constraints may require use of some of the Rex Chert/limestone in the final topography of Panel B; Rex Chert/limestone that is not required for the final (revised) topography will be stockpiled as noted above.

The FS will evaluate the extent and available volume of Panel B Rex Chert/limestone in coordination with the timing and backfill requirements of mining in this area, along with agency concurrence with the proposal to stockpile Rex Chert/limestone. Additional assessment of potentially limiting conditions, hauling logistics, and other considerations will also occur as part of the FS.

Chemical information for Rex Chert/limestone is summarized in Table 2-3 and draws from various sources including the Panels F&G Final Environmental Impact Statement (EIS) (BLM and USFS 2007), data evaluation in support of the Panels F&G EIS (Maxim Technologies 2004) and the Site Investigation (NewFields 2005), and annual reporting of Rex Chert/limestone sampling required for ongoing mining operations (Simplot 2014 and 2015a). Because the characteristics of Rex Chert/limestone are well known and sampling of Rex Chert/limestone is included in ongoing mining operations (Table 2-3), additional testing of these materials is not expected. Agronomic information is not needed due to its use as a capillary break/drainage layer and not for plant growth. If a 2-foot-thick Rex Chert/limestone layer is identified for a CERCLA cover system in Panels A and D, then a maximum material volume of 2.4 million cy would be needed.

3.0 COST EVALUATION

Preliminary cost estimates have been prepared for the development of material sources and to haul these materials to areas requiring CERCLA cover systems. The cost estimates presented in Table 3-1 are based on Simplot's mining operations, and incorporate the following aspects for source area development:

- Construction of new haul roads (area = distance x width)
- Storm water controls during construction
- Borrow development and mining/loading
- Material hauling
- Haul road reclamation
- Borrow area/pit reclamation

The cost estimates assume hauling of material from the potential material source areas to Panel D. Although both Panels A and D may require CERCLA cover systems, the haul destination was set at a common Panel D location because the specific locations requiring these covers are not currently known. The FS will further refine these cost estimates, and present them in context with other borrow area criteria.

4.0 CONCLUSIONS

The evaluation presented in this Technical Memorandum shows there are sufficient volumes of locally available Dinwoody for use in CERCLA covers (7.4 million cy), which exceeds the range of volumes anticipated (1.2 to 6 million cy) although not yet specified. At this stage in the FS evaluation of CERCLA cover systems, the properties of Dinwoody are sufficiently known due to their extensive and successful use for cover systems at the Mine. However, further site-specific characterization is planned for the proposed Dinwoody material source areas.

The material properties of Rex Chert/limestone are well known as this material has been used in cover systems at the Mine, including the Pole Canyon cover system constructed in 2015 under the NTCRA (USFS, IDEQ, and Shoshone-Bannock Tribes 2013). Coordination of potential CERCLA cover system material needs and Rex Chert/limestone made available during Panel B mining will be required so that an appropriate volume is stockpiled.

5.0 REFERENCES

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Table 2-1. Potential CERCLA Cover Material Source Areas

Proposed Borrow Area ID	Location (Approximate)	Land Ownership	Lease - ON/OFF	Other Considerations	Maximum Estimated Area (Acres)	Maximum Estimated Volume (cy)		Slope Issues?	Assumed Haul Destination	Haul Distance [c] (miles)	Recommended for Further Evaluation for CERCLA FS?
						Dinwoody [a,b]	Chert				
B-Panel DW Borrow A	SW 1/4 S17 T8S R46E	Primarily USFS	OFF	N.A.	36	960,453	- [d]	None anticipated	D-Panel	5.0	Yes
B-Panel DW Borrow B	N 1/2 S2 T8S R46E	Primarily USFS	OFF	N.A.	38	1,005,433	-	None anticipated	D-Panel	4.6	Yes
North Smoky DW Borrow A	S 1/2 S18 T8S R46E	USFS	OFF	Slope/Dip	112	2,955,445	-	Too Steep	D-Panel	4.1	No, too steep and questionable material
North Smoky DW Borrow B	SW 1/4 S18 T8S R46E	USFS	ON	Springs/Steep - Stability Issues	21	560,926	-	None anticipated	D-panel	3.6	No, stability issues
West Smoky DW Borrow A	E 1/2 S24 T8S R45E	USFS	OFF	Springs/Steep - Stability Issues	102	2,701,440	-	Yes	D-Panel	3.4	No, stability issues
West Smoky DW Borrow B	E 1/2 S25 T8S R45E	USFS	ON	Power Lines	24	648,240	-	Yes	D-Panel	2.2	No
West Smoky DW Borrow C	E 1/2 S36 T8S R45E	USFS	NO	Power Lines	79	2,095,535	-	Yes	D-Panel	1.7	Yes
D-Panel DW Borrow A	NE 1/4 S1 T9S R45E	USFS	OFF	Sage Creek IRA	31	833,451	-	Yes	D-Panel	1.3	Yes
D-panel DW Borrow (Approved)	W 1/2 S6 T9S R46E	USFS	ON	Used for Pole Canyon cover (2015)	30	793,763	-	None Anticipated	Pole Canyon	1.3	No, already used
D-panel DW Borrow B	SE 1/4 S1 T9S R45E	USFS	OFF	Sage Creek IRA	52	1,381,148	-	Yes	D-Panel	1.1	Yes
E-Panel DW Borrow A	SE 1/2 S12 T9S R45E	USFS	ON	Adjacent to E-0 DW failure	21	566,218	-	Probable	D-Panel	3.0	Yes
E-Panel DW Borrow B	SE 1/4 S12 T9S R45E	USFS	ON	Adjacent to E-0 DW failure	22	590,031	-	Probable	D-Panel	3.5	Yes
B-Pits Chert	S19 T8S R46E	USFS	ON	Chert from mining operations; stockpiled	-	-	See note [e]	None Anticipated	D-panel	4.6	Yes

[a] Volume estimates for Dinwoody assume a borrow designed and configured the same as the recently approved and developed D-Panel borrow area (for Pole Canyon ODA NTCRA cover construction).

[b] Dinwoody suitable as cover material is assumed as Type A, extending to 35-ft depth and following the surface topography, based on Dinwoody drilling at the mine including the E-Panel and D-Panel dinwoody borrows.

[c] Haul destination to D-panel is assumed only for planning and hauling cost estimation, although A-panel may also require CERCLA cover systems. Distance assumes new roads are required to access areas.

[d] "-" indicates not applicable.

[e] Chert volume is not estimated but a much larger volume would be available from mining in B pits than required for a 2-ft thick chert layer, assuming placement in the entire Panels A and D area.

Table 2-2. Existing Information for Dinwoody Characterization

Data Collection Effort	Timing of Sample Collection	Type of Data	Basic Statistics of Results				Comments	Reporting of Results
			No. of Samples	Minimum	Mean	Maximum		
Dinwoody borrow area, west of Panel D - Pole Canyon 2013 NTCRA (sampling prior to construction)	March 2015	Selenium	3	0.12 mg/kg	0.23 mg/kg	0.4 mg/kg	---	Selenium results were provided to USFS via email (Simplot 2015b), and will be presented along with other results in the Removal Action Report to be prepared in summer 2016
		RI COPCs [a]	1	N.A. [b]	N.A.	N.A.	22 RI COPCs, including selenium	
		Agronomic	3	N.A.	N.A.	N.A.	Multiple analyses, including pH, organic matter, nutrients, etc	
		Geotechnical	3	N.A.	N.A.	N.A.	Multiple tests, including permeability, gradation, moisture density, Atterberg limits, liquid limit/plastic limit	
Pole Canyon 2013 NTCRA (QC testing during construction)	Summer 2015, during construction	Geotechnical	>10	N.A.	N.A.	N.A.	Multiple tests, including gradation, moisture density, etc	Results will be presented in the Removal Action Report to be prepared in summer 2016
Remedial Investigation sampling of Panel E (Area 2) in 2010	June 2010	RI COPCs [a]	10	0.073 mg/kg	0.325 mg/kg	0.94 mg/kg	Samples were collected in an area reclaimed using Dinwoody and topsoil, and in some cases may include a mixture of both materials	Results were presented in the RI Report (Formation 2014)
Panel E reclamation material sampling	Sept 2007	Selenium	2	<4 mg/kg	<4 mg/kg	<4 mg/kg	---	Results were provided to USFS and BLM via letter (Simplot 2007)
		Agronomic	3	N.A.	N.A.	N.A.	Multiple analyses, including pH, organic matter, nutrients, etc	

[a] Twenty-two Chemicals of Potential Concern (COPCs) were identified for the Smoky Canyon Mine Remedial Investigation (RI) to characterize COPCs at the Site.

[b] N.A. indicates data are available but statistics are not presented due to multiple analytes (see comments).

Table 2-3. Existing Information for Rex Chert/Limestone Characterization

Data Collection Effort	Timing of Sample Collection	Type of Data	Basic Statistics of Results				Comments	Reporting of Results
			No. of Samples	Minimum	Mean	Maximum		
Panels F&G EIS	Early 2000s	Selenium	20	1.3 mg/kg	3.3 mg/kg	5.9 mg/kg	Panel F Rex Chert samples	First reported by Maxim (2004), included in Panels F&G Final EIS (BLM and USFS 2007)
			23	0.6 mg/kg	1.5 mg/kg	3.5 mg/kg	Panel G Rex Chert samples	
			15	0.7 mg/kg	2.2 mg/kg	10 mg/kg	Panel F Franson Limestone samples	
Multiple studies at Smoky Canyon Mine	Early to mid 2000s	SI COPCs [a]	7 (selenium)	0.6 mg/kg	1.0 mg/kg	1.4 mg/kg	Rex Chert - 7 SI COPCs, including selenium	Presented in Site Investigation (SI) Report (NewFields 2005)
Chert sampling for ongoing operations	2013	Selenium	12	<0.5 mg/kg	1.1 mg/kg	3.3 mg/kg	Chert samples from Panels B and F, Franson Limstone from Panel F, and chert from Pole Canyon stockpile area	2013 Annual Environmental Monitoring Report (Simplot 2014)
Chert sampling for ongoing operations	2014	Selenium	10	<0.5 mg/kg	0.5 mg/kg	0.8 mg/kg	Chert samples from Panels B and F, and Franson Limestone from Panel F	2014 Annual Environmental Monitoring Report (Simplot 2015a)

[a] Seven Chemicals of Potential Concern (COPCs) were identified for the Smoky Canyon Mine Site Investigation (SI) to characterize COPCs at the Site.

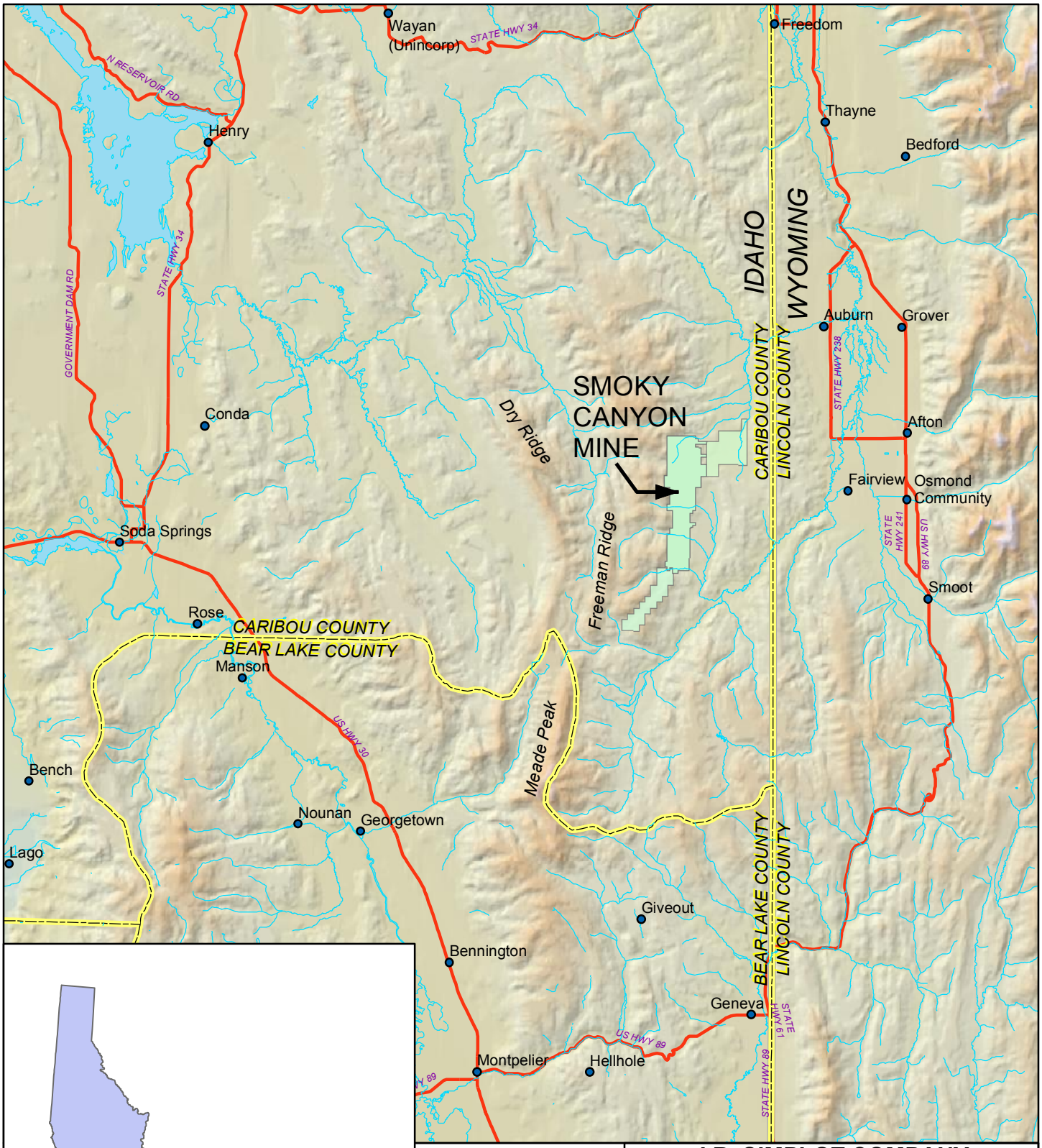
[b] N.A. indicates data are available but statistics are not presented due to multiple analytes (see comments).

Table 3-1. Estimated Costs to Develop Material Sources and Haul for CERCLA Cover Use

Proposed Borrow Area ID	Haul Destination	Proposed New Haul Road Distance (mile)	New Haul Road Disturbance Area (acres)	Estimated Haul Distance (mile)	Haul Road Construction Cost Estimate	Stormwater Controls Cost Estimate	Total Construction Cost Estimate	Haul Road Reclamation Cost Estimate	Maximum Borrow Pit Area (acres)	Borrow Pit Reclamation Cost Estimate	Estimated Material Recovery (cy)	Estimated Haul Cost ($/cy)	Material Haulage Cost Estimate	Estimated Borrow Development and Mining/ Loading Costs ($/cy)	Total Cost ($/cy)
B-Panel DW Borrow A	D-Panel	0.67	5.1	5.0	$ 1,993,049	$ 68,696	$ 2,061,744	$ 83,375	36	$ 233,046	960,453	$ 1.08	$ 1,039,841	$ 0.65	$3.97
B-Panel DW Borrow B	D-Panel	0.54	4.4	4.6	$ 1,606,338	$ 55,367	$ 1,661,704	$ 71,534	38	$ 243,960	1,005,433	$ 1.02	$ 1,030,465	$ 0.65	$3.40
West Smoky DW Borrow C	D-Panel	0.47	11.2	1.7	$ 1,398,109	$ 48,189	$ 1,446,298	$ 181,511	79	$ 508,464	2,095,535	$ 0.60	$ 1,264,127	$ 0.65	$2.03
D-Panel DW Borrow A	D-Panel	0.73	7.4	1.3	$ 2,171,531	$ 74,847	$ 2,246,378	$ 120,196	32	$ 202,230	833,451	$ 0.54	$ 453,434	$ 0.65	$4.03
D-panel DW Borrow B	D-Panel	1.08	15.3	1.1	$ 3,212,676	$ 110,733	$ 3,323,409	$ 248,827	52	$ 335,124	1,381,148	$ 0.52	$ 715,506	$ 0.65	$3.75
E-Panel DW Borrow A	D-Panel	1.46	16.0	3.0	$ 4,343,061	$ 149,695	$ 4,492,756	$ 259,695	21	$ 137,388	566,218	$ 0.79	$ 447,042	$ 0.65	$9.83
E-Panel DW Borrow B	D-Panel	2.01	34.7	3.5	$ 5,979,146	$ 206,087	$ 6,185,233	$ 562,861	22	$ 143,166	590,031	$ 0.87	$ 511,000	$ 0.65	$12.95
B-Pits Chert	D-Panel	0.00	0.0	2.7	- [a]	-	-	-	0	$ -	3,581,600 [b]	$ 0.74	$ 2,650,384	$ 0.35	$1.09

[a] "-" indicates not applicable.

[b] Estimated Material Recovery is assumed for chert for cost estimation only. The actual required volume would be less than the chert volume available from mining in the B pits.



J.R. SIMPLOT COMPANY

SMOKY CANYON MINE
CERCLA COVER MATERIAL SOURCE EVALUATION

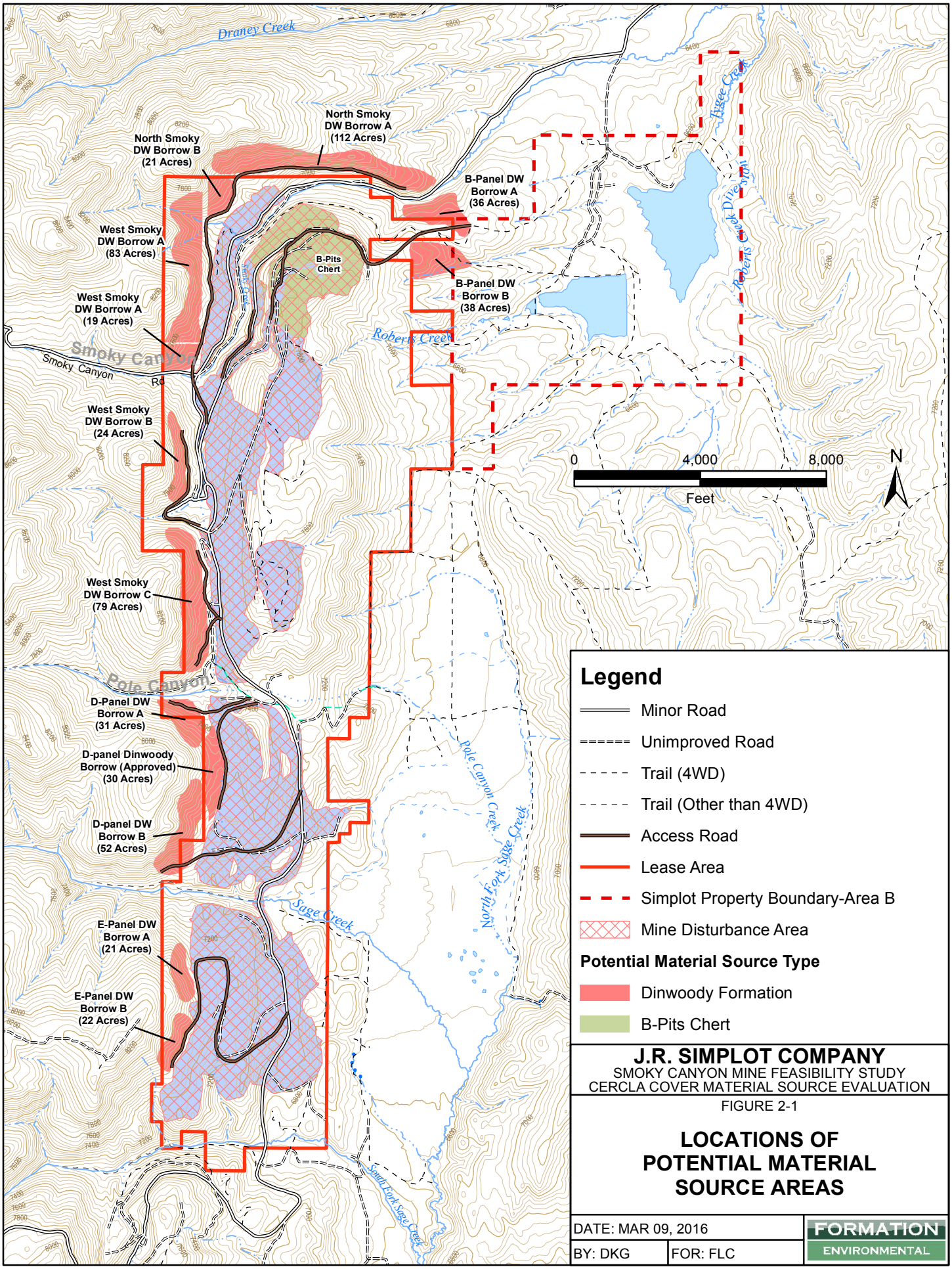
FIGURE 1-1

SITE LOCATION

DATE: MAR 07, 2016
BY: DKG
FOR: FLC

FORMATION ENVIRONMENTAL

S:\GIS\arcprj\20101109\plt\FS\Borrow_Areas\Fig1-1_RgnLoc.mxd



J.R. SIMPLOT COMPANY

SMOKY CANYON MINE FEASIBILITY STUDY
CERCLA COVER MATERIAL SOURCE EVALUATION

FIGURE 2-1

LOCATIONS OF POTENTIAL MATERIAL SOURCE AREAS

DATE: MAR 09, 2016	FORMATION ENVIRONMENTAL
BY: DKG	FOR: FLC

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